SEQUENCE LISTING

<110> FAGAN, RICHARD, JOSEPH
PHELPS, CHRISTOPHER BENJAMIN
GUTTERIDGE, ALEX

<120> ADHESION MOLECULES

<130> 674575-2004

<140> 10/615,515
<141> 2003-07-08

<150> PCT/GB02/00107
<151> 2002-01-11

<150> GB 0100750.9
<151> 2001-01-11

<160> 12

<170> PatentIn Ver. 3.2

<210> 1
<211> 1284
<212> DNA
<213> Escherichia coli

<400> 1
atgacctggt ttattgaccg gcgtctgaac ggcaaaaaca aaagcatggt gaatcgccag 60
cgtttttac gccgttataa agcgcaaatt aaacagtcga tctccgaggc cattaataag 120
cgttcggtga ctgacgtcga cagcggcgaa tccgtatcca ttcccacgga agatattagc 180
gaaccgatgt ttcatcaggg gcgtggcggt ctgcgccacc gcgtgcatcc gggcaatgac 240
catttcgtcc agaacgaccg aattgaacgt ccccagggtg gcggcggagg ttccggcagt 300
ggtcagggcc aggccagcca ggatggtgaa ggtcaggatg aatttgtctt tcagatttcg 360
aaagatgagt atcttgatct gctctttgaa gatttggcct taccgaatct gaaacaaaac 420
caacaacgcc agctgaccga atataaaacg catcgggcgg gttataccgc taacggcgtt 480
ccggccaata tcagcgttgt gcgttcattg cagaactcac tggcgcgacg cacagccatg 540
acggcaggca agcggcggga acttcatgca ctggaagaga atttggccat catcagcaac 600
agtgaacctg cgcaactgct ggaagaggaa cgtctgcgca aagaaattgc agaattacgt 660
gccaaaattg aacgcgtccc ttttattgac accttcgatt tacgttacaa gaactacgag 720
aagcggcccg atccctccag ccaggcagtg atgttttgcc tgatggacgt ttccggttca 780
atggatcaat ccactaaaga tatggctaag cgtttttata ttctgctgta tctgttcctc 840
agcagaacgt ataagaacgt ggaagtcgta tacatccgcc atcataccca ggcgaaagaa 900
gtcgatgaac atgagttttt ctactcgcag gaaacaggcg gcaccattgt ttccagcgcc 960
ctgaaactga tggatgaggt agtgaaagag cgttataacc cggcacagtg gaatatttac 1020
gctgcacaag catcggacgg cgataactgg gccgatgact ctccgctttg ccatgaaatc 1080
ctggcgaaaa aattattacc tgttgttcgt tattacagct atatcgaaat tacccgtcgt 1140
gcacatcaga cattgtggcg agaatatgag catctgcaat ctactttcga caactttgcg 1200
atgcagcaca tccgcgacca ggatgatatt tatccggtgt tccgtgaact gtttcataaa 1260
caaaatgcaa cagctaaagg ctaa 1284

<210> 2
<211> 427
<212> PRT
<213> Escherichia coli

<400> 2

```
Met Thr Trp Phe Ile Asp Arg Arg Leu Asn Gly Lys Asn Lys Ser Met
  1               5                  10                  15

Val Asn Arg Gln Arg Phe Leu Arg Arg Tyr Lys Ala Gln Ile Lys Gln
            20                  25                  30

Ser Ile Ser Glu Ala Ile Asn Lys Arg Ser Val Thr Asp Val Asp Ser
        35                  40                  45

Gly Glu Ser Val Ser Ile Pro Thr Glu Asp Ile Ser Glu Pro Met Phe
    50                  55                  60

His Gln Gly Arg Gly Gly Leu Arg His Arg Val His Pro Gly Asn Asp
65                  70                  75                  80

His Phe Val Gln Asn Asp Arg Ile Glu Arg Pro Gln Gly Gly Gly Gly
                85                  90                  95

Gly Ser Gly Ser Gly Gln Gly Gln Ala Ser Gln Asp Gly Glu Gly Gln
            100                 105                 110

Asp Glu Phe Val Phe Gln Ile Ser Lys Asp Glu Tyr Leu Asp Leu Leu
        115                 120                 125

Phe Glu Asp Leu Ala Leu Pro Asn Leu Lys Gln Asn Gln Gln Arg Gln
    130                 135                 140

Leu Thr Glu Tyr Lys Thr His Arg Ala Gly Tyr Thr Ala Asn Gly Val
145                 150                 155                 160

Pro Ala Asn Ile Ser Val Val Arg Ser Leu Gln Asn Ser Leu Ala Arg
                165                 170                 175

Arg Thr Ala Met Thr Ala Gly Lys Arg Arg Glu Leu His Ala Leu Glu
            180                 185                 190

Glu Asn Leu Ala Ile Ile Ser Asn Ser Glu Pro Ala Gln Leu Leu Glu
        195                 200                 205

Glu Glu Arg Leu Arg Lys Glu Ile Ala Glu Leu Arg Ala Lys Ile Glu
    210                 215                 220

Arg Val Pro Phe Ile Asp Thr Phe Asp Leu Arg Tyr Lys Asn Tyr Glu
225                 230                 235                 240

Lys Arg Pro Asp Pro Ser Ser Gln Ala Val Met Phe Cys Leu Met Asp
                245                 250                 255

Val Ser Gly Ser Met Asp Gln Ser Thr Lys Asp Met Ala Lys Arg Phe
            260                 265                 270

Tyr Ile Leu Leu Tyr Leu Phe Leu Ser Arg Thr Tyr Lys Asn Val Glu
        275                 280                 285
```

```
Val Val Tyr Ile Arg His His Thr Gln Ala Lys Glu Val Asp Glu His
    290                 295                 300

Glu Phe Phe Tyr Ser Gln Glu Thr Gly Gly Thr Ile Val Ser Ser Ala
305                 310                 315                 320

Leu Lys Leu Met Asp Glu Val Val Lys Glu Arg Tyr Asn Pro Ala Gln
                325                 330                 335

Trp Asn Ile Tyr Ala Ala Gln Ala Ser Asp Gly Asp Asn Trp Ala Asp
            340                 345                 350

Asp Ser Pro Leu Cys His Glu Ile Leu Ala Lys Lys Leu Leu Pro Val
        355                 360                 365

Val Arg Tyr Tyr Ser Tyr Ile Glu Ile Thr Arg Arg Ala His Gln Thr
    370                 375                 380

Leu Trp Arg Glu Tyr Glu His Leu Gln Ser Thr Phe Asp Asn Phe Ala
385                 390                 395                 400

Met Gln His Ile Arg Asp Gln Asp Asp Ile Tyr Pro Val Phe Arg Glu
                405                 410                 415

Leu Phe His Lys Gln Asn Ala Thr Ala Lys Gly
            420                 425
```

<210> 3
<211> 1284
<212> DNA
<213> Escherichia coli

<400> 3

```
gtgcgcagtc ggctgaaaga tgcccgagtc ccgccggaac tcaccgaaga ggtgatgtgc 60
tatcagcaaa gccagctcct ctccacgcca cagtttattg tgcagctacc acagatcctg 120
gacttactgc atcgtctgaa ttctccatgg gcagaacaag cccgacagtt ggttgatgct 180
aacagcacga tcacttcagc gttacacacg ctttttctcc agcgttggcg tttaagtctg 240
atcgtgcaag caacgacgtt aaatcaacag ctattagaag aagaacgcga acaactgttg 300
agtgaagttc aggaacgcat gacgctgagc ggacaacttg aaccgattct cgcagataac 360
aatactgcag ctggtcgtct gtgggatatg agcgccggtc agcttaaacg tggcgactat 420
cagttgattg tgaaatacgg tgaatttctt aacgaacagc cggaactgaa acgcctggca 480
gagcagctgg ggcgttctcg ggaagccaaa tcaataccgc gcaacgatgc gcagatggaa 540
accttccgca ccatggtgcg cgaaccggcg acggttcctg agcaggttga tggtctgcaa 600
caaagcgatg atattttacg tctcctgccg ccagaactgg cgacactagg gataacggaa 660
ctggagtatg agttttaccg tcggctggtg gaaaaacagt tgctcaccta tcgcctgcac 720
ggtgagtcgt ggcgtgaaaa agtgatcgaa cgtccggtgg tacataaaga ttacgatgaa 780
cagccgcgcg ggccgtttat tgtctgtgtg gatacttccg gctcaatggg cggctttaat 840
gaacagtgtg cgaaagcgtt ctgcctggcc ttgatgcgca ttgctctcgc agaaaaccgg 900
cgctgctata ttatgctatt ttccaccgag atcgtccgtt atgagctttc aggcccacaa 960
ggcatcgaac aagcaatccg ttttttaagc cagcagtttc gtggcggcac cgatcttgcc 1020
agttgttttc gcgccattat ggaacgcttg caaagcaggg aatggtttga tgccgatgcg 1080
gtggtgattt ctgattttat cgctcagcgg ttgcctgacg acgtgacgag taaagtgaaa 1140
gagctgcagc gggtacatca gcatcgcttt catgccgtgg cgatgtcggc acacggcaaa 1200
cccggcatca tgcgcatttt cgatcatatc tggcgctttg ataccgggat gcgaagccgc 1260
ctgctcagac gctggcggcg ataa                                       1284
```

<210> 4
<211> 427
<212> PRT
<213> Escherichia coli

<400> 4

```
Met Arg Ser Arg Leu Lys Asp Ala Arg Val Pro Pro Glu Leu Thr Glu
  1               5                  10                  15

Glu Val Met Cys Tyr Gln Gln Ser Gln Leu Leu Ser Thr Pro Gln Phe
             20                  25                  30

Ile Val Gln Leu Pro Gln Ile Leu Asp Leu Leu His Arg Leu Asn Ser
         35                  40                  45

Pro Trp Ala Glu Gln Ala Arg Gln Leu Val Asp Ala Asn Ser Thr Ile
     50                  55                  60

Thr Ser Ala Leu His Thr Leu Phe Leu Gln Arg Trp Arg Leu Ser Leu
 65                  70                  75                  80

Ile Val Gln Ala Thr Thr Leu Asn Gln Gln Leu Leu Glu Glu Glu Arg
                 85                  90                  95

Glu Gln Leu Leu Ser Glu Val Gln Glu Arg Met Thr Leu Ser Gly Gln
            100                 105                 110

Leu Glu Pro Ile Leu Ala Asp Asn Asn Thr Ala Ala Gly Arg Leu Trp
        115                 120                 125

Asp Met Ser Ala Gly Gln Leu Lys Arg Gly Asp Tyr Gln Leu Ile Val
    130                 135                 140

Lys Tyr Gly Glu Phe Leu Asn Glu Gln Pro Glu Leu Lys Arg Leu Ala
145                 150                 155                 160

Glu Gln Leu Gly Arg Ser Arg Glu Ala Lys Ser Ile Pro Arg Asn Asp
                165                 170                 175

Ala Gln Met Glu Thr Phe Arg Thr Met Val Arg Glu Pro Ala Thr Val
            180                 185                 190

Pro Glu Gln Val Asp Gly Leu Gln Gln Ser Asp Asp Ile Leu Arg Leu
        195                 200                 205

Leu Pro Pro Glu Leu Ala Thr Leu Gly Ile Thr Glu Leu Glu Tyr Glu
    210                 215                 220

Phe Tyr Arg Arg Leu Val Glu Lys Gln Leu Leu Thr Tyr Arg Leu His
225                 230                 235                 240

Gly Glu Ser Trp Arg Glu Lys Val Ile Glu Arg Pro Val Val His Lys
                245                 250                 255

Asp Tyr Asp Glu Gln Pro Arg Gly Pro Phe Ile Val Cys Val Asp Thr
            260                 265                 270
```

```
Ser Gly Ser Met Gly Gly Phe Asn Glu Gln Cys Ala Lys Ala Phe Cys
        275                 280                 285

Leu Ala Leu Met Arg Ile Ala Leu Ala Glu Asn Arg Arg Cys Tyr Ile
    290                 295                 300

Met Leu Phe Ser Thr Glu Ile Val Arg Tyr Glu Leu Ser Gly Pro Gln
305                 310                 315                 320

Gly Ile Glu Gln Ala Ile Arg Phe Leu Ser Gln Gln Phe Arg Gly Gly
                325                 330                 335

Thr Asp Leu Ala Ser Cys Phe Arg Ala Ile Met Glu Arg Leu Gln Ser
            340                 345                 350

Arg Glu Trp Phe Asp Ala Asp Ala Val Val Ile Ser Asp Phe Ile Ala
        355                 360                 365

Gln Arg Leu Pro Asp Asp Val Thr Ser Lys Val Lys Glu Leu Gln Arg
    370                 375                 380

Val His Gln His Arg Phe His Ala Val Ala Met Ser Ala His Gly Lys
385                 390                 395                 400

Pro Gly Ile Met Arg Ile Phe Asp His Ile Trp Arg Phe Asp Thr Gly
                405                 410                 415

Met Arg Ser Arg Leu Leu Arg Arg Trp Arg Arg
            420                 425
```

<210> 5
<211> 1792
<212> DNA
<213> Homo sapiens

<400> 5

```
attttgcctt tttgttaggt ttcctaaaga caaaaaaaaa tggaggaatc tgtaaaccaa 60
atgcagccac tgaatgagaa gcagatagcc aattctcagg atggatatgt atggcaagtc 120
actgacatga atcgactaca ccggttctta tgtttcggtt ctgaaggtgg gacttattat 180
atcaaagaac agaagttggg ccttgaaaat gctgaagctt taattagatt gattgaagat 240
ggcagaggat gtgaagtgat acaagaaata aagtcattta gtcaagaagg cagaaccaca 300
aagcaagagc ctatgctctt tgcacttgcc atttgttccc agtgctccga cataagcaca 360
aaacaagcag catttaaagc tgtttctgaa gtttgtcgca ttcctaccca tctctttact 420
tttatccagt ttaagaaaga tctgaaggaa agcatgaaat gtggcatgtg gggtcgtgcc 480
ctccggaagg ctatagcgga ctggtacaat gagaaaggtg gcatggccct tgctctggca 540
gttacaaaat ataaacagag aaatggctgg tctcacaaag atctattaag attgtcacat 600
cttaaacctt ccagtgaagg acttgcaatt gtgaccaaat atattacaaa gggctggaaa 660
gaagttcatg aattgtataa agaaaaagca ctctctgtgg agactgaaaa attattaaag 720
tatctggagg ctgtagagaa agtgaagcgc acaaaagatg agctagaagt cattcatcta 780
atagaagaac atagattagt tagagaacat cttttaacaa atcacttaaa gtctaaagag 840
gtatggaagg ctttgttaca agaaatgccg cttactgcat tactaaggaa tctaggaaag 900
atgactgcta attcagtact tgaaccagga aattcagaag tatctttagt atgtgaaaaa 960
ctgtgtaatg aaaaactatt aaaaaaggct cgtatacatc catttcatat tttgatcgca 1020
ttagaaactt acaagacagg tcatggtctc agagggaaac tgaagtggcg ccctgatgaa 1080
gaaattttga aagcattgga tgctgctttt tataaaacat ttaagacagt tgaaccaact 1140
```

ggaaaacgtt tcttactagc tgttgatgtc agtgcttcta tgaaccaaag agttttgggt 1200
agtatactca acgctagtac agttgctgca gcaatgtgca tggttgtcac acgaacagaa 1260
aaagattctt atgtagttgc tttttccgat gaaatggtac catgtccagt gactacagat 1320
atgaccttac aacaggtttt aatggctatg agtcagatcc cagcaggtgg aactgattgc 1380
tctcttccaa tgatctgggc tcagaagaca aacacacctg ctgatgtctt cattgtattc 1440
actgataatg agacctttgc tggaggtgtc catcctgcta ttgctctgag ggagtatcga 1500
aagaaaatgg atattccagc taaattgatt gtttgtggaa tgacatcaaa tggtttcacc 1560
attgcagacc cagatgatag aggcatgttg gatatgtgcg gctttgatac tggagctctg 1620
gatgtaattc gaaatttcac attagatatg atttaaccat aagcagcagc acgatccaga 1680
gatccattgc catcagtgat ctcactaaaa aatatacagc tacttcccag ctaatctcca 1740
cccaatgaat gatgatggta tagtatgtgc ataatggaaa gttaccttac tg 1792

<210> 6
<211> 538
<212> PRT
<213> Homo sapiens

<400> 6

```
Met Glu Glu Ser Val Asn Gln Met Gln Pro Leu Asn Glu Lys Gln Ile
  1               5                  10                  15

Ala Asn Ser Gln Asp Gly Tyr Val Trp Gln Val Thr Asp Met Asn Arg
             20                  25                  30

Leu His Arg Phe Leu Cys Phe Gly Ser Glu Gly Gly Thr Tyr Tyr Ile
         35                  40                  45

Lys Glu Gln Lys Leu Gly Leu Glu Asn Ala Glu Ala Leu Ile Arg Leu
     50                  55                  60

Ile Glu Asp Gly Arg Gly Cys Glu Val Ile Gln Glu Ile Lys Ser Phe
 65                  70                  75                  80

Ser Gln Glu Gly Arg Thr Thr Lys Gln Glu Pro Met Leu Phe Ala Leu
                 85                  90                  95

Ala Ile Cys Ser Gln Cys Ser Asp Ile Ser Thr Lys Gln Ala Ala Phe
            100                 105                 110

Lys Ala Val Ser Glu Val Cys Arg Ile Pro Thr His Leu Phe Thr Phe
        115                 120                 125

Ile Gln Phe Lys Lys Asp Leu Lys Glu Ser Met Lys Cys Gly Met Trp
    130                 135                 140

Gly Arg Ala Leu Arg Lys Ala Ile Ala Asp Trp Tyr Asn Glu Lys Gly
145                 150                 155                 160

Gly Met Ala Leu Ala Leu Ala Val Thr Lys Tyr Lys Gln Arg Asn Gly
                165                 170                 175

Trp Ser His Lys Asp Leu Leu Arg Leu Ser His Leu Lys Pro Ser Ser
            180                 185                 190

Glu Gly Leu Ala Ile Val Thr Lys Tyr Ile Thr Lys Gly Trp Lys Glu
        195                 200                 205
```

```
Val His Glu Leu Tyr Lys Glu Lys Ala Leu Ser Val Glu Thr Glu Lys
    210                 215                 220

Leu Leu Lys Tyr Leu Glu Ala Val Glu Lys Val Lys Arg Thr Lys Asp
225                 230                 235                 240

Glu Leu Glu Val Ile His Leu Ile Glu Glu His Arg Leu Val Arg Glu
                245                 250                 255

His Leu Leu Thr Asn His Leu Lys Ser Lys Glu Val Trp Lys Ala Leu
            260                 265                 270

Leu Gln Glu Met Pro Leu Thr Ala Leu Leu Arg Asn Leu Gly Lys Met
        275                 280                 285

Thr Ala Asn Ser Val Leu Glu Pro Gly Asn Ser Glu Val Ser Leu Val
    290                 295                 300

Cys Glu Lys Leu Cys Asn Glu Lys Leu Leu Lys Lys Ala Arg Ile His
305                 310                 315                 320

Pro Phe His Ile Leu Ile Ala Leu Glu Thr Tyr Lys Thr Gly His Gly
                325                 330                 335

Leu Arg Gly Lys Leu Lys Trp Arg Pro Asp Glu Glu Ile Leu Lys Ala
            340                 345                 350

Leu Asp Ala Ala Phe Tyr Lys Thr Phe Lys Thr Val Glu Pro Thr Gly
        355                 360                 365

Lys Arg Phe Leu Leu Ala Val Asp Val Ser Ala Ser Met Asn Gln Arg
    370                 375                 380

Val Leu Gly Ser Ile Leu Asn Ala Ser Thr Val Ala Ala Ala Met Cys
385                 390                 395                 400

Met Val Val Thr Arg Thr Glu Lys Asp Ser Tyr Val Val Ala Phe Ser
                405                 410                 415

Asp Glu Met Val Pro Cys Pro Val Thr Thr Asp Met Thr Leu Gln Gln
            420                 425                 430

Val Leu Met Ala Met Ser Gln Ile Pro Ala Gly Gly Thr Asp Cys Ser
        435                 440                 445

Leu Pro Met Ile Trp Ala Gln Lys Thr Asn Thr Pro Ala Asp Val Phe
    450                 455                 460

Ile Val Phe Thr Asp Asn Glu Thr Phe Ala Gly Gly Val His Pro Ala
465                 470                 475                 480

Ile Ala Leu Arg Glu Tyr Arg Lys Lys Met Asp Ile Pro Ala Lys Leu
                485                 490                 495

Ile Val Cys Gly Met Thr Ser Asn Gly Phe Thr Ile Ala Asp Pro Asp
            500                 505                 510
```

```
Asp Arg Gly Met Leu Asp Met Cys Gly Phe Asp Thr Gly Ala Leu Asp
        515                 520                 525

Val Ile Arg Asn Phe Thr Leu Asp Met Ile
    530                 535
```

<210> 7
<211> 183
<212> PRT
<213> Homo sapiens

<400> 7

```
Gly Asn Val Asp Leu Val Phe Leu Phe Asp Gly Ser Met Ser Leu Gln
  1               5                  10                  15

Pro Asp Glu Phe Gln Lys Ile Leu Asp Phe Met Lys Asp Val Met Lys
            20                  25                  30

Lys Leu Ser Asn Thr Ser Tyr Gln Phe Ala Ala Val Gln Phe Ser Thr
        35                  40                  45

Ser Tyr Lys Thr Glu Phe Asp Phe Ser Asp Tyr Val Lys Arg Lys Asp
    50                  55                  60

Pro Asp Ala Leu Leu Lys His Val Lys His Met Leu Leu Leu Thr Asn
65                  70                  75                  80

Thr Phe Gly Ala Ile Asn Tyr Val Ala Thr Glu Val Phe Arg Glu Glu
                85                  90                  95

Leu Gly Ala Arg Pro Asp Ala Thr Lys Val Leu Ile Ile Ile Thr Asp
            100                 105                 110

Gly Glu Ala Thr Asp Ser Gly Asn Ile Asp Ala Ala Lys Asp Ile Ile
        115                 120                 125

Arg Tyr Ile Ile Gly Ile Gly Lys His Phe Gln Thr Lys Glu Ser Gln
    130                 135                 140

Glu Thr Leu His Lys Phe Ala Ser Lys Pro Ala Ser Glu Phe Val Lys
145                 150                 155                 160

Ile Leu Asp Thr Phe Glu Lys Leu Lys Asp Leu Phe Thr Glu Leu Gln
                165                 170                 175

Lys Lys Ile Tyr Val Ile Glu
            180
```

<210> 8
<211> 201
<212> PRT
<213> Homo sapiens

<400> 8
Ser Cys Pro Ser Leu Ile Asp Val Val Val Val Cys Asp Glu Ser Asn
1 5 10 15

Ser Ile Tyr Pro Trp Asp Ala Val Lys Asn Phe Leu Glu Lys Phe Val
20 25 30

Gln Gly Leu Asp Ile Gly Pro Thr Lys Thr Gln Val Gly Leu Ile Gln
35 40 45

Tyr Ala Asn Asn Pro Arg Val Val Phe Asn Leu Asn Thr Tyr Lys Thr
50 55 60

Lys Glu Glu Met Ile Val Ala Thr Ser Gln Thr Ser Gln Tyr Gly Gly
65 70 75 80

Asp Leu Thr Asn Thr Phe Gly Ala Ile Gln Tyr Ala Arg Lys Tyr Ala
85 90 95

Tyr Ser Ala Ala Ser Gly Gly Arg Arg Ser Ala Thr Lys Val Met Val
100 105 110

Val Val Thr Asp Gly Glu Ser His Asp Gly Ser Met Leu Lys Ala Val
115 120 125

Ile Asp Gln Cys Asn His Asp Asn Ile Leu Arg Phe Gly Ile Ala Val
130 135 140

Leu Gly Tyr Leu Asn Arg Asn Ala Leu Asp Thr Lys Asn Leu Ile Lys
145 150 155 160

Glu Ile Lys Ala Ile Ala Ser Ile Pro Thr Glu Arg Tyr Phe Phe Asn
165 170 175

Val Ser Asp Glu Ala Ala Leu Leu Glu Lys Ala Gly Thr Leu Gly Glu
180 185 190

Gln Ile Phe Ser Ile Glu Gly Gly Thr
195 200

<210> 9
<211> 187
<212> PRT
<213> Homo sapiens

<400> 9
Asp Ser Asp Ile Ala Phe Leu Ile Asp Gly Ser Gly Ser Ile Ile Pro
1 5 10 15

His Asp Phe Arg Arg Met Lys Glu Phe Val Ser Thr Val Met Glu Gln
20 25 30

Leu Lys Lys Ser Lys Thr Leu Phe Ser Leu Met Gln Tyr Ser Glu Glu
35 40 45

```
Phe Arg Ile His Phe Thr Phe Lys Glu Phe Gln Asn Asn Pro Asn Pro
     50                  55                  60

Arg Ser Leu Val Lys Pro Ile Thr Gln Leu Leu Gly Arg Thr His Thr
 65                  70                  75                  80

Ala Thr Gly Ile Arg Lys Val Val Arg Glu Leu Phe Asn Ile Thr Asn
                 85                  90                  95

Gly Ala Arg Lys Asn Ala Phe Lys Ile Leu Val Val Ile Thr Asp Gly
            100                 105                 110

Glu Lys Phe Gly Asp Pro Leu Gly Tyr Glu Asp Val Ile Pro Glu Ala
        115                 120                 125

Asp Arg Glu Gly Val Ile Arg Tyr Val Ile Gly Val Gly Asp Ala Phe
    130                 135                 140

Arg Ser Glu Lys Ser Arg Gln Glu Leu Asn Thr Ile Ala Ser Lys Pro
145                 150                 155                 160

Pro Arg Asp His Val Phe Gln Val Asn Asn Phe Glu Ala Leu Lys Thr
                165                 170                 175

Ile Gln Asn Gln Leu Arg Glu Lys Ile Phe Ala
            180                 185
```

<210> 10
<211> 537
<212> PRT
<213> Mus musculus

<400> 10

```
Met Glu Gly Ser Ala Asn Gln Leu Gln Pro Leu Ser Glu Thr Gln Val
  1               5                  10                  15

Val Asn Ser Glu Gly Gly Cys Val Trp Gln Val Thr Asp Met Asn Val
            20                  25                  30

Arg Arg Phe Leu Cys Phe Gly Ser Glu Gly Gly Thr Tyr Tyr Ile Lys
        35                  40                  45

Glu Gln Lys Leu Gly Leu Glu Asn Ala Glu Ala Leu Ile Arg Leu Ile
     50                  55                  60

Glu Asp Gly Arg Gly Cys Glu Val Ile Gln Glu Ile Lys Ser Phe Ser
 65                  70                  75                  80

Gln Glu Gly Arg Thr Ala Lys Gln Glu Pro Leu Leu Phe Ala Leu Ala
                 85                  90                  95

Val Cys Ser Gln Cys Ala Asp Ile Asn Thr Lys Gln Ala Ala Phe Lys
            100                 105                 110

Ala Val Pro Glu Val Cys Arg Ile Pro Thr His Leu Phe Thr Phe Ile
        115                 120                 125
```

```
Gln Phe Lys Lys Asp Leu Lys Glu Ser Met Lys Cys Gly Met Trp Gly
    130                 135                 140

Arg Ala Leu Arg Lys Ala Val Ala Asp Trp Tyr Asn Glu Lys Gly Gly
145                 150                 155                 160

Met Ala Val Ala Leu Val Val Thr Lys Tyr Lys Gln Arg Asn Gly Trp
                165                 170                 175

Ser His Lys Asp Leu Leu Arg Leu Ser His Leu Lys Pro Ser Ser Glu
            180                 185                 190

Gly Leu Ala Ile Val Thr Lys Tyr Ile Thr Lys Gly Trp Lys Glu Val
        195                 200                 205

His Glu Glu Tyr Lys Glu Lys Ala Leu Ser Val Glu Ala Glu Lys Leu
    210                 215                 220

Leu Lys Tyr Leu Glu Ala Val Glu Lys Val Lys Arg Thr Lys Asp Asp
225                 230                 235                 240

Leu Glu Val Ile His Leu Ile Glu Glu His Gln Leu Val Arg Glu His
                245                 250                 255

Leu Leu Thr Asn His Leu Lys Ser Lys Glu Val Trp Lys Ala Leu Leu
            260                 265                 270

Gln Glu Met Pro Leu Thr Ala Leu Leu Arg Asn Leu Gly Lys Met Thr
        275                 280                 285

Ala Asn Ser Val Leu Glu Pro Gly Asn Ser Glu Val Ser Leu Ile Cys
    290                 295                 300

Glu Lys Leu Ser Asn Glu Lys Leu Leu Lys Lys Ala Arg Ile His Pro
305                 310                 315                 320

Phe His Val Leu Ile Ala Leu Glu Thr Tyr Arg Ala Gly His Gly Leu
                325                 330                 335

Arg Gly Lys Leu Lys Trp Ile Pro Asp Lys Asp Ile Leu Gln Ala Leu
            340                 345                 350

Asp Ala Ala Phe Tyr Thr Thr Phe Lys Thr Val Glu Pro Thr Gly Lys
        355                 360                 365

Arg Phe Leu Leu Ala Val Asp Val Ser Ala Ser Met Asn Gln Arg Ala
    370                 375                 380

Leu Gly Ser Val Leu Asn Ala Ser Thr Val Ala Ala Ala Met Cys Met
385                 390                 395                 400

Val Val Thr Arg Thr Glu Lys Glu Ser Ser Val Val Ala Phe Ala Cys
                405                 410                 415

Asp Met Val Pro Phe Pro Val Thr Thr Asp Met Thr Leu Gln Gln Val
            420                 425                 430
```

```
Leu Thr Ala Met Asn Lys Val Pro Ala Gly Asn Thr Asp Cys Ser Leu
        435                 440                 445

Pro Met Ile Trp Ala Gln Lys Thr Gly Thr Ala Ala Asp Val Phe Ile
    450                 455                 460

Val Phe Thr Asp Asn Glu Thr Phe Ala Gly Gln Val His Pro Ala Val
465                 470                 475                 480

Ala Leu Arg Glu Tyr Arg Lys Lys Met Asp Ile Pro Ala Lys Leu Ile
                485                 490                 495

Val Cys Gly Met Thr Ser Asn Gly Phe Thr Ile Ala Asp Pro Asp Asp
            500                 505                 510

Arg Gly Met Leu Asp Met Cys Gly Phe Asp Thr Ala Ala Leu Asp Val
        515                 520                 525

Ile Arg Asn Phe Thr Leu Asp Val Ile
    530                 535


<210> 11
<211> 538
<212> PRT
<213> Xenopus laevis

<400> 11
Met Glu Ala Thr Met Asp Gln Thr Gln Pro Leu Asn Glu Lys Gln Val
  1               5                  10                  15

Pro Asn Ser Glu Gly Cys Tyr Val Trp Gln Val Ser Asp Met Asn Arg
             20                  25                  30

Leu Arg Arg Phe Leu Cys Phe Gly Ser Glu Gly Gly Thr Tyr Tyr Ile
         35                  40                  45

Glu Glu Lys Lys Leu Gly Gln Glu Asn Ala Glu Ala Leu Leu Arg Leu
     50                  55                  60

Ile Glu Asp Gly Lys Gly Cys Glu Val Val Gln Glu Ile Lys Thr Phe
 65                  70                  75                  80

Ser Gln Glu Gly Arg Ala Ala Lys Gln Glu Pro Thr Leu Phe Ala Leu
                 85                  90                  95

Ala Val Cys Ser Gln Cys Ser Asp Ile Lys Thr Lys Gln Ala Ala Phe
            100                 105                 110

Arg Ala Val Pro Glu Val Cys Arg Ile Pro Thr His Leu Phe Thr Phe
        115                 120                 125

Ile Gln Phe Lys Lys Asp Leu Lys Glu Gly Met Lys Cys Gly Met Trp
    130                 135                 140
```

```
Gly Arg Ala Leu Arg Lys Ala Val Ser Asp Trp Tyr Asn Thr Lys Asp
145                 150                 155                 160

Ala Leu Asn Leu Ala Met Ala Val Thr Lys Tyr Lys Gln Arg Asn Gly
                165                 170                 175

Trp Ser His Lys Asp Leu Leu Arg Leu Ser His Ile Lys Pro Ala Asn
            180                 185                 190

Glu Gly Leu Thr Met Val Ala Lys Tyr Val Ser Lys Gly Trp Lys Glu
        195                 200                 205

Val Gln Glu Ala Tyr Lys Glu Lys Glu Leu Ser Pro Glu Thr Glu Lys
    210                 215                 220

Val Leu Lys Tyr Leu Glu Ala Thr Glu Arg Val Lys Arg Thr Lys Asp
225                 230                 235                 240

Glu Leu Glu Ile Ile His Leu Ile Asp Glu Tyr Arg Leu Val Arg Glu
                245                 250                 255

His Leu Leu Thr Ile His Leu Lys Ser Lys Glu Ile Trp Lys Ser Leu
            260                 265                 270

Leu Gln Asp Met Pro Leu Thr Ala Leu Leu Arg Asn Leu Gly Lys Met
        275                 280                 285

Thr Ala Asp Ser Val Leu Ala Pro Ala Ser Ser Glu Val Ser Ser Val
    290                 295                 300

Cys Glu Arg Leu Thr Asn Glu Lys Leu Leu Lys Lys Ala Arg Ile His
305                 310                 315                 320

Pro Phe His Ile Leu Val Ala Leu Glu Thr Tyr Lys Lys Gly His Gly
                325                 330                 335

Asn Arg Gly Lys Leu Arg Trp Ile Pro Asp Thr Ser Ile Val Glu Ala
            340                 345                 350

Leu Asp Asn Ala Phe Tyr Lys Ser Phe Lys Leu Val Glu Pro Thr Gly
        355                 360                 365

Lys Arg Phe Leu Leu Ala Ile Asp Val Ser Ala Ser Met Asn Gln Arg
    370                 375                 380

Val Leu Gly Ser Ile Leu Asn Ala Ser Val Val Ala Ala Ala Met Cys
385                 390                 395                 400

Met Leu Val Ala Arg Thr Glu Lys Asp Ser His Met Val Ala Phe Ser
                405                 410                 415

Asp Glu Met Leu Pro Cys Pro Ile Thr Val Asn Met Leu Leu His Glu
            420                 425                 430

Val Val Glu Lys Met Ser Asp Ile Thr Met Gly Ser Thr Asp Cys Ala
        435                 440                 445
```

```
Leu Pro Met Leu Trp Ala Gln Lys Thr Asn Thr Ala Ala Asp Ile Phe
    450                 455                 460

Ile Val Phe Thr Asp Cys Glu Thr Asn Val Glu Asp Val His Pro Ala
465                 470                 475                 480

Thr Ala Leu Lys Gln Tyr Arg Glu Lys Met Gly Ile Pro Ala Lys Leu
                485                 490                 495

Ile Val Cys Ala Met Thr Ser Asn Gly Phe Ser Ile Ala Asp Pro Asp
            500                 505                 510

Asp Arg Gly Met Leu Asp Ile Cys Gly Phe Asp Ser Gly Ala Leu Asp
        515                 520                 525

Val Ile Arg Asn Phe Thr Leu Asp Leu Ile
    530                 535


<210> 12
<211> 643
<212> PRT
<213> Caenorhabditis elegans

<400> 12
Met Ala Asp Glu Leu Asn Glu Phe Gln Glu Ala Gly Asn Phe Asn Glu
  1               5                  10                  15

Glu Ala Leu Met Arg Leu Ser Asn Val Cys Ala Arg Leu Arg Arg Met
            20                  25                  30

Gln Met Leu Glu Ser Asp Val Glu Ile Thr Val Val Asp Gly Glu Leu
        35                  40                  45

Lys Arg Val Pro Arg Gln Met Glu Lys Val Lys Asp Gly Gln Val Glu
    50                  55                  60

Asn Asn Ala Gly Gly Phe Val Phe Pro Val Ser Asp Glu Thr Gln Val
65                  70                  75                  80

Arg Arg Phe Leu Ile Leu Gly Ser Asp Lys Gly Ser Tyr His Gln Ser
                85                  90                  95

Ser Glu Lys Ile Thr Ile Asp Asn Ala Gln Arg Ile Ile Lys Ile Ile
            100                 105                 110

Glu Gln Gly Asn Gly His Met Val Leu Lys Glu Leu Ala Leu Ile Asn
        115                 120                 125

Ala Glu Asn Arg Asn Pro Lys Met Asn Ala Met Ile Phe Thr Leu Ala
    130                 135                 140

Ile Cys Ala Arg Ile Ser Thr His Asp Thr Thr Lys Lys Thr Glu Cys
145                 150                 155                 160

Pro Met Leu Asn Ala Tyr Ser Asp Tyr Ile Arg Ala Leu His Asp Ser
                165                 170                 175
```

```
Ala Leu Asp Leu Ile Pro Glu Val Cys Arg Thr Pro Thr His Leu Phe
            180                 185                 190

Glu Phe Val Asp Tyr Cys Gln Thr Ile Ser Glu Ser Thr Lys Ala Gly
        195                 200                 205

Gly Ala Lys Ser Ser Thr Gly Trp Gly Arg Ser Met Arg Asn Ala Ile
    210                 215                 220

Ser Lys Trp Tyr Thr Thr Lys Thr Thr Glu Lys Leu Ala Met Leu Leu
225                 230                 235                 240

Thr Lys Tyr Pro Gln Arg Glu Gly Trp Ser His Arg Asp Leu Phe Arg
                245                 250                 255

Leu Ala His Pro Asn Leu Met Asp Ser Arg Ser His Gly Gln Ser Glu
            260                 265                 270

Asp Arg Leu Glu Arg Glu Gln Leu Phe Arg Phe Ala Val Lys Gly Asp
        275                 280                 285

Leu Val Lys Arg Lys Arg Lys Met Ser Val Glu Glu Val Ala Glu Val
    290                 295                 300

Glu Lys Val Trp Asp Lys Lys Ala Leu Lys Leu Pro Tyr Thr Glu Glu
305                 310                 315                 320

Gln Leu Ile Lys Glu Glu Gln Ser Arg Ala Leu Asn Leu Val Glu Ala
                325                 330                 335

Tyr Leu Lys Leu Lys Asn Glu Gln Ser Glu Glu Val Ile Val Ala Ala
            340                 345                 350

Ile Lys Lys His Gly Leu Val Arg Glu His Leu Pro Thr Thr Ser Leu
        355                 360                 365

Asn Ser Lys Leu Val Trp Glu Thr Leu Phe Asp Val Ser Met Pro Met
    370                 375                 380

Thr Ala Met Ile Arg Asn Leu Ala Lys Met Thr Val Val Gly Ala Leu
385                 390                 395                 400

Asp Glu Lys Arg Val Asp Asn Ile Val Lys Arg Leu Thr Asp Gln Glu
                405                 410                 415

Glu Leu Arg Arg Ser Arg Ile His Pro Ile Asn Leu Leu Thr Ala Arg
            420                 425                 430

Ala Val Tyr Ala Gln Gly Arg Gly Asp Lys Gly Ser Leu Thr Trp Glu
        435                 440                 445

Pro Asn Gln Lys Ile Cys Asp Ala Leu Glu Ala Gly Phe Tyr Lys Ala
    450                 455                 460

Phe Val Asn Ala Pro Pro Thr Gly Lys Arg Tyr Cys Leu Ala Leu Asp
465                 470                 475                 480
```

```
Val Ser Gly Ser Met Thr Ser Arg Val Ser Ser Ser Pro Leu Ser Cys
                485                 490                 495

Arg Glu Ala Ala Thr Gly Met Ser Leu Ile Asn Leu His Asn Glu Ala
            500                 505                 510

Glu Val Arg Cys Val Ala Phe Cys Asp Lys Leu Thr Glu Leu Pro Phe
        515                 520                 525

Thr Lys Asp Trp Lys Ile Gly Gln Val Asn Asp Tyr Val Asn Asn Leu
    530                 535                 540

Asp Phe Gly Arg Thr Asp Cys Gly Leu Pro Met Thr Trp Ala Thr Glu
545                 550                 555                 560

Asn Asn Leu Lys Phe Asp Val Phe Ile Ile Tyr Thr Asp Asn Asp Thr
                565                 570                 575

Trp Ala Gly Glu Ile His Pro Phe Glu Ala Ile Lys Lys Tyr Arg Glu
            580                 585                 590

Ala Ser Gly Ile His Asp Ala Lys Val Ile Val Met Ala Met Gln Ala
        595                 600                 605

Tyr Asp Tyr Ser Ile Ala Asp Pro Ser Asp Ala Gly Met Leu Asp Ile
    610                 615                 620

Thr Gly Phe Asp Ser Ala Val Pro Gln Ile Val His Glu Phe Val Thr
625                 630                 635                 640

Gly Lys Ile
```